Coal Mac

ACI
ARCH COAL, INC.

10/07

Mr. Ken Marcum, Inspector
WVDEP
Logan Field Office
1101 George Kostas Drive
Logan, WV 25601

Re: Coal Mac, Inc.
NPDES Compliance Order
WV0068764

Dear Mr. Marcum:

The following status report is required to be submitted every six (6) months to your attention per compliance order #5 dated April 5, 2007 on permit number WV0068764. Coal removal on this permit is complete so a special materials handling plan is not necessary. The following activities have been undertaken relating to selenium monitoring and treatment:

1. A comprehensive review of the historical water monitoring data for the permit has been completed. During the period ranging from September 2004 through March 2007, the outflows from this permit had an average selenium concentration average of 3.7 micrograms per liter vs. the established water quality standard of 5.0 micrograms per liter.
2. Outflow site #14 was the only site to exhibit average selenium concentrations in excess of the water quality standards during 2007. The average concentration from Outflow #14 during 2007 was 5.95 micrograms per liter vs. the water quality standard of 5.0 micrograms per liter. The selenium concentration from this site has been decreasing with time and at present rates of reduction will be below water quality standards in approximately 14 months.

3. No alternative treatment techniques are being implemented on the complex at this time. Given the rate of decline of the selenium concentrations at outflow, it is not expected that alternative treatment techniques will need to be employed.

Should you have any questions concerning this submittal, please contact me at (304) 792-8432.

Sincerely,

Terry C. Potter, P. E.
Manager of Engineering

Coal Mac

ACI
ARCH COAL, INC.

10/08

Mr. Ken Marcum, Inspector
WVDEP
Logan Field Office
1101 George Kostas Drive
Logan, WV 25601

Re: Coal Mac, Inc.
NPDES Compliance Order
WV0068764

Dear Mr. Marcum:

The following status report is required to be submitted every six (6) months to your attention per compliance order #5 dated April 5, 2007 on permit number WV0068764. Coal removal on this permit is complete so a special materials handling plan is not necessary.

Please see the attached report for a summary of efforts by Arch Coal – Eastern group to address selenium discharges through the reporting period ending Sept, 2008. Should you have any questions concerning this submittal, please contact me at (304) 792-8432.

Sincerely,

Terry C. Potter, P. E.
Manager of Engineering

Selenium Monitoring, Research and Treatment Efforts

Arch Coal, Inc. – Eastern Operations

The independent operating subsidiaries of Arch Coal, Inc. that has permitted operations in West Virginia (Mingo Logan Coal Company and Coal Mac, Inc.) have undertaken the following steps and procedures to determine the presence of selenium in discharges from mining areas and potential treatment options that are available/practical:

- Monitoring and testing for selenium at various point source discharges and stream monitoring stations was initially implemented in 2004 and is currently on-going.
- As a result of findings in the programmatic EIS conducted on mountaintop mining, and independent research, a potential source of selenium in the receiving streams was identified as a selenium additive to fertilizer used in the reclamation process. Testing and analysis of the fertilizer found that selenium was being added at a rate of approximately one percent (1%) by weight. As a result of the testing and analysis, the operations have implemented a policy that requires the vendors to certify that the fertilizer being used in our properties does not contain any selenium additives.
- The particle size distribution of the sediments from a representative structure was evaluated to determine basin efficiency.
- A "Special Selenium Program" was implemented in March 2007. This program monitors the selenium concentrations found in the intake and effluent of several constructed treatment structures in addition to monitoring stations in the receiving watersheds. In addition to selenium, this study monitors several other water quality parameters in order to evaluate the relationship and other chemical characteristics. Selenium concentrations are analyzed to determine if the selenium in the discharge is in a suspended state or is in solution. The monitoring stations were established to be representative of discharges associated with active and reclaimed surface mining operations and potential discharges from regraded underground mining operations.
- Following a presentation by Dr. Ray Lovett at the West Virginia Coal Association 2007 Annual Symposium, treatment of the inflow into several point source discharges with application of an Iron Wool reagent was initiated in the second quarter of 2007. Application of this treatment is accomplished by constructing metal baskets that are charged with unoxidized iron wool. The iron wool is wrapped in a jute-matting blanket and is then placed within the baskets. The baskets are then placed within the inflow channel of the treatment structures and are situated such that during low flow periods the flow is in contact with the iron wool. During high flow events, the basket would be submerged with resultant additional exposure to contact with the iron wool. Another variation of this application is to wrap the iron wool in a jute blanket in an elongated roll configuration. This application is utilized for inflows that have a lower base and peak flows.

- Research was conducted regarding the potential for phyto-remediation of elevated selenium concentration. In conjunction with Don Bryne of Suwannee Laboratories, Inc. from Lake City Florida, several recommended species of aquatic and aqueous plants were purchased and planted during 2007 on several structures.
- Additional research and testing eliminated from further consideration the addition of an iron soil amendment that would react with and reduce selenium concentrations. The amendment that is available contains $FeSO_4$ and our research indicates a distinct correlation to elevated selenium concentrations in relationship to increasing sulfate concentrations.
- An Intern Program was developed to conduct an evaluation of collected selenium data. Two senior level students majoring in Chemical Engineering from West Virginia University Institute of Technology filled the Intern positions. The Intern Program was created prior to receiving the Orders of Compliance from the Department of Environmental Protection on April 5, 2007. The Intern project consisted of compiling all the available data, relating to Selenium, on both our Dal-Tex facility and Coal Mac, Hobet 07 Idle facility. The interns were charged to see what, if any, potential relationships and/or patterns exist between the various aspects of the water chemistry. As part of the Internship Program, the interns were required to prepare a formal report and also to conduct a presentation in front of management personnel summarizing conclusions and results of their evaluations.

Coal Mac

ARCH COAL, INC.

October 9, 2009

Mr. Blake Neil, Inspector
WVDEP Logan Field Office
1101 George Kostas Drive
Logan, WV 25601

Re: Coal Mac, Inc.
NPDES Compliance Order
WV0068764

Dear Mr. Neil:

The following status report is being submitted to your attention per compliance order #5 dated April 5, 2007 on permit number WV0068764. Coal removal on this permit is complete so a special materials handling plan is not necessary. The following activities have been undertaken since 2004 relating to selenium monitoring and treatment:

Monitoring (2004 through 2009)

Monitoring and testing for selenium at various point source discharges and stream monitoring stations was initially implemented in 2004 and is currently on-going.

During the period ranging from September 2004 through March 2007, the outflows from this permit had an average selenium concentration average of 3.7 micrograms per liter (mcg/l) vs. the established water quality standard of 5.0 mcg/l.

Outflow site #14 was the only site to exhibit average selenium concentrations in excess of the water quality standards during 2009. The average concentration from Outflow #14 during the period Jan, 2009 through Sept, 2009 was 14.44 mcg/l.

Phyto-remediation

Research was conducted regarding the potential for phyto-remediation of elevated selenium concentration. In conjunction with Don Bryne of Suwannee Laboratories, Inc. from Lake City Florida, bull rush was identified as an aquatic species capable of reducing selenium levels in water flows. Test plots of bull rush were planted during 2008 to test effectiveness for selenium identified in Coal Mac outflows.

Third Party Consultants

Coal Mac, Inc. has met with numerous third party consultants, identified as experts in selenium removal, to review and evaluate available potential treatment options. Recommended treatment options are presently being evaluated.

Should you have any questions concerning this submittal, please contact me at (304) 792-8432.

Sincerely,

Terry C. Potter, P.E.
Engineering Manager

Coal Mac

ACI
ARCH COAL, INC.

4/08

Mr. Ken Marcum, Inspector
WVDEP
Logan Field Office
1101 George Kostas Drive
Logan, WV 25601

Re: Coal Mac, Inc.
NPDES Compliance Order
WV0068764

Dear Mr. Marcum:

The following status report is required to be submitted every six (6) months to your attention per compliance order #5 dated April 5, 2007 on permit number WV0068764. Coal removal on this permit is complete so a special materials handling plan is not necessary.
The following activities have been undertaken relating to selenium monitoring and treatment through April, 2008:

1. Bull rush has been planted strategically behind the Outlet #14 pond. Bull rush reportedly has been found to uptake selenium from water. The progress of the bull rush will be monitored for future effectiveness.

Should you have any questions concerning this submittal, please contact me at (304) 792-8432.

Sincerely,

Terry C. Potter, P. E.
Manager of Engineering

Coal Mac

ARCH COAL, INC.

April 3, 2009

Mr. Blake Neil, Inspector
WVDEP Logan Field Office
1101 George Kostas Drive
Logan, WV 25601

Re: Coal Mac, Inc.
NPDES Compliance Order
WV0068764

Dear Mr. Neil:

The following status report is being submitted to your attention per compliance order #5 dated April 5, 2007 on permit number WV0068764. Coal removal on this permit is complete so a special materials handling plan is not necessary. The following activities have been undertaken since 2004 relating to selenium monitoring and treatment:

Monitoring (2004 through 2009)

Monitoring and testing for selenium at various point source discharges and stream monitoring stations was initially implemented in 2004 and is currently on-going.

During the period ranging from September 2004 through March 2007, the outflows from this permit had an average selenium concentration average of 3.7 micrograms per liter (mcg/l) vs. the established water quality standard of 5.0 mcg/l.

Outflow site #14 was the only site to exhibit average selenium concentrations in excess of the water quality standards during 2009. The average concentration from Outflow #14 during the period Jan, 2009 through March, 2009 was 11.3 mcg/l.

Phyto-remediation

Research was conducted regarding the potential for phyto-remediation of elevated selenium concentration. In conjunction with Don Bryne of Suwannee Laboratories, Inc. from Lake City Florida, bull rush was identified as an aquatic species capable of reducing selenium levels in water flows. Test plots of bull rush were planted during 2008 to test effectiveness for selenium identified in Coal Mac outflows.

Third Party Consultants

Coal Mac, Inc. has met with numerous third party consultants, identified as experts in selenium removal, to review and evaluate available potential treatment options. Recommended treatment options are presently being evaluated.

Should you have any questions concerning this submittal, please contact me at (304) 792-8432.

Sincerely,

Terry C. Potter, P.E.
Engineering Manager